

### Remarks

Applicants make no amendments in response to the Office Action dated December 20, 2005 since they still firmly believe that the invention as presently defined in the claims is patentable over the prior art references cited by the Examiner.

Claims 1 to 84 stand rejected under 35 USC §103(a) as being unpatentable over Ramakrishnan (US Patent No. 6,167,029) in view of Tang (US Patent No. 6,195,332).

### Deficiencies in the allegation of obviousness

Applicants respectfully submit that the arguments raised in their previous response remain entirely pertinent and respectfully request that the Examiner provides further reasoning to support the allegation of obviousness since it appears, at least to the Applicants, that the Examiner is applying impermissible hindsight reasoning by mosaicing prior art references using the Applicants' own disclosure as a template. In particular, Applicants believe that the Examiner has:

- a) failed to show any suggestion or motivation in the prior art to combine the two references;
- b) failed to show any reasonable expectation of success in combining the two references;
- c) failed to address properly the argument raised by the Applicants that the flow control mechanisms and contextual teachings of the references are technically incompatible (the Applicants will expand further on this point in this response) which strongly argues against the presence of motivation and an expectation of success; and

- d) failed to address properly the argument raised by the Applicants that Tang teaches away from the application of LAN based techniques of flow control (such as those of Ramakrishnan) in the Ethernet over Ring based networks which also strongly argues against the presence of motivation and a expectation of success.

Requirements to establish a *prima facie* case of obviousness

With no disrespect intended, Applicants would like to take this opportunity to quote directly from section 2142 of the Manual of Patent Examination Procedure as a means of explaining to the Examiner what Applicants believe is required in order to establish a *prima facie* case of obviousness:

*"To reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.*

**ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS**

To establish a *prima facie* case of obviousness, three basic criteria must be met. *First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re*

Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections.

*When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper.* Ex parte Skinner, 2 USPQ2d 1788 (Bd. Pat. App. & Inter. 1986). "

(emphasis added by Applicant)

#### Examiner's latest response to Applicants' arguments

In the latest Office Action, the Examiner responds to Applicant's arguments (pages 6-7) by stating that:

- a) because Ramakrishnan and Tang both relate to flow control of Ethernet frame based packets, then "it is reasonable to combine the teachings";
- b) "a flow control technique is used to control data transmissions between different network nodes and it does not depend on what the network nodes are resided within. Therefore the functions such as monitoring buffer capacity and transmitting control packets between entities are not part of any particular network protocol ... Herein the functions can be implemented in any network for controlling data transmissions"; and
- c) "it does not matter whether a centralized or distributed flow control [is] taught by Tang or Ramakrishnan. The point herein is that the flow

control of Tang can be used in an Ethernet over ring network, therefore, another flow control, as taught by Ramakrishnan, can also be used in an Ethernet over ring network since both flow controls are related to and [control] Ethernet data transmissions."

Applicants fundamentally disagree with each of these statements and with the reasoning of the Examiner as a whole since it appears to:

- a) ignore the actual teachings of the prior art;
- b) rely on the Examiner's own unsupported statements to the effect that "any teaching of flow control can be used in any network architecture";
- c) use hindsight evidence of motivation and suggestion to combine which evidence is not in the references themselves or generally available to one of ordinary skill in the art;
- d) be based on very abstract and general allegations such as "it is reasonable to combine" and "flow control ... can be used" which are not sufficient specific evidence of suggestion or motivation to combine – what is required is evidence of why one skilled in the art would - not could - actually combine the two specific references; and
- e) ignore Applicant's arguments that there would be no reasonable expectation of success in combining and that Tang teaches away from so doing.

In short, the Examiner's reasoning begs the very questions which must form the basis of an assessment of obviousness, as set out above, and without being grounded in the prior art itself, the Examiners' arguments appear to be indulging in impermissible hindsight reasoning.

It is fair to say that the Examiner has previously provided a statement addressing the issue of motivation in a bit more detail. On page 3 of the Office Action, the Examiner argues that:

"It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Ramakrishnan and Tang and to incorporate the flow control technique of Ramakrishnan in a frame based over SONET network, e.g., Ethernet over SONET, to increase security, reliability, support bandwidth-intensive applications, improve network utilization, and provide QoS options for differentiated services."

However, this is again the Examiner's own statement and unsupported by any prior art evidence. As such this is merely an element of hindsight reasoning. The Examiner has failed to identify any teaching in either Tang, Ramakrishnan or generally in the prior art which evidences such motivation. That the suggestion or motivation be found in the prior art is not an option, but a requirement of law and the Examiner must provide this evidence in order to establish a case of *prima facie* obviousness.

Furthermore, the Examiner's statement again appears to be very abstract, general and unrelated to the specific teachings of either of the two references. As such Applicant's do not accept that it would provide any motivation to one skilled in the art to combine the specific teachings as alleged. Unfortunately, the Examiner's response to Applicants' argument has not explained the prior art basis or relevance of this previous statement any further.

Not obvious to combine

On the contrary, Applicants believe that one skilled in the art would not be motivated to incorporate the flow control technique of Ramakrishnan in the Ethernet-over-ring communications network of Tang for the following reasons:

Firstly, there is the simple and powerful point that Tang already teaches a very specific and detailed flow control technique which is suitable for its stated objectives and network context, so why should one of ordinary skill in the art be motivated to replace it with another flow control technique?

Secondly, the characteristics of the specific flow control technique of Ramakrishnan are fundamentally different from the objectives and network context of Tang such that there is clear technical incompatibility and such that one skilled in the art would not seriously consider combining the references. This will now be explained in greater detail than in Applicants' previous response.

Ramakrishnan teaches a flow control technique for Ethernet LANs which is "integrated" into each Ethernet LAN card by being performed by MAC control hardware and without the need for external control. This addresses the problems of delay and consequent loss of data of external, non-integrated flow control techniques. (See eg column 3, lines 4 to 59 and column 7, lines 41 to 54).

In Ramakrishnan (see column 7, line 7 to column 8 line 20), each MAC integrated circuit (ie each Ethernet card) on an Ethernet LAN has:

- i) a transmit and a receive buffer;
- ii) each having an associated "almost full" and an "almost empty" level indicator (eg set at 95% capacity and 5% capacity respectively);

- iii) the ability, without external control, to automatically generate and transmit pause frames when the buffers exceed their respective associated levels.

Thus, Ramakrishnan teaches a flow control technique which is:

- a) specifically intended for use in the MAC control integrated circuit of each local Ethernet card therefore placing the flow control intelligence within each MAC control integrated circuit; and
- b) uses local hardware monitoring of buffers to automatically generate pause frames to control data flow without external control (eg without the external control of a central controller which coordinates flow control network-wide);
- c) uses a capacity-based monitoring (ie fill levels of buffers) method rather than a transmission rate-based analysis method of flow control.

In contrast, Tang is concerned with a centralized, rate-based flow control protocol for an Ethernet over ring network (ie a WAN – see title, abstract, Fig 3).

The stated objectives of Tang (see column 5) include:

- i) “to provide a transmission protocol and control architecture that does not require complex and computationally intensive translation from the existing LAN protocols”; and
- ii) to “ensure fairness in the amount of data transmitted in the network.”

In Tang (see abstract and columns 9, line 7 to column 11, line 34), a central network controller:

- i) "determines source and destination addresses of all data packets entering traveling within or leaving the WAN";
- ii) "counts and tabulates all the flow paths of all the data packets queued from all the network nodes on the WAN network with respect to each of the network nodes";
- iii) uses an algorithm to determine an upstream transmission factor  $U$ ; and
- iv) applies a maximum allowable tributary transmission rate  $T$  to all tributaries of all nodes, to give effect to the algorithm.

Thus, Tang teaches a network context and objectives in which any flow control mechanism must have the following characteristics:

- a) flow control must be carried out by a central controller having WAN-wide authority, therefore placing the flow control intelligence at a central point in the WAN;
- b) external control of each node and each nodal tributary is mandatory; and
- c) a transmission rate-based flow control analysis method (ie actual rates of data flows) is used rather than a capacity-based monitoring (ie fill levels of buffers).

It can easily be seen that these characteristics of a flow control technique are necessary in order to achieve fairness in the amount of data transmitted in the WAN as a whole. As such, Applicants fail to understand how the opposite characteristics of the flow control technique of Ramakrishnan could possibly meet the stated objectives of Tang in its network context.

*In short, Applicants cannot understand how one skilled in the art would be able to apply the "locally implemented in a distributed fashion", "without external control", "buffer capacity-based" flow control technique of Ramakrishnan in the differing*



*network context and objectives of Tang which require external, centralized control by a controller with WAN-wide authority using a transmission rate-based flow control mechanism in order to achieve fairness in the amount of data transmitted in the WAN as a whole.*

In summary, Applicants firmly believe that one skilled in the art would not be motivated to incorporate the flow control technique of Ramakrishnan in the Ethernet-over-ring communications network of Tang since they are technically incompatible and have different objectives.

Additionally, as explained in Applicants' previous response, Tang teaches that a different – ie non-LAN based – protocol be used for achieving equitable transmission of Ethernet over the long distances of WANs. Thus, Tang teaches away from using the LAN-based pause frame technique for flow control as taught by Ramakrishnan.

Furthermore, each of the reasons why the objectives and network context of Tang is technically incompatible with the flow control technique of Ramakrishnan gives rise to a corresponding argument that Tang teaches away from using the LAN-based pause frame technique for flow control as taught by Ramakrishnan. For example, the facts that Tang requires flow control be carried out by a central controller having WAN-wide authority, therefore placing the flow control intelligence at a central point in the WAN; Tang requires external control of each node and each nodal tributary; and that Tang requires a transmission rate-based flow control analysis method.

For the reasons given above it is also submitted that one skilled in the art would have no reasonable expectation of success in attempting to incorporate the flow control technique of Ramakrishnan in the Ethernet-over-ring communications network of Tang. The objectives and network context of Tang are so different

from the characteristics of the flow control technique of Ramakrishnan, than one skilled in the art would not have any expectation of success in combining them.

In view of the Applicants' belief that the Examiner has failed to establish a *prima facie* case of obviousness, Applicants have not considered in detail and make no admissions in respect of the Examiner's allegations of the teachings of each of the references cited. Applicants reserve the right to respond on this issue if the Examiner insists on maintaining the allegation of obviousness.

In summary, Applicants believe that the Examiner has indulged in impermissible hindsight reasoning by mosaicing prior art references using the Applicants' own disclosure as a template. Applicants therefore request favorable reconsideration and that the present application be allowed.

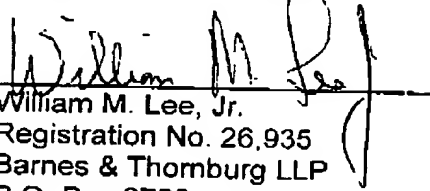
However, if the Examiner continues to reject claims 1 to 84 under 35 USC 103(a) as being unpatentable over Ramakrishnan in view of Tang, and with a view to appeal, Applicants kindly request that the Examiner address in a further Office Action the following issues which Applicants believe have not yet been properly addressed:

- a) the Examiner must show a suggestion or motivation in the prior art to combine the two references;
- b) the Examiner must show a reasonable expectation of success in combining the two references;
- c) the Examiner must address properly the argument raised by the Applicants that the flow control mechanisms and contextual teachings of the references are technically incompatible; and
- d) the Examiner must address properly the argument raised by the Applicants that Tang teaches away from the application of LAN based

techniques of flow control (such as those of Ramakrishnan) in the Ethernet over Ring based networks.

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Respectfully submitted,

  
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